

REMARKS

Upon entry of the present Amendment, claims 1-8, 12, 15, and 17-34 are all the claims pending in the application. Claim 12 is amended to address an informality. New claims 30-34 are added. No new matter is presented.

To summarize the Office Action, claims 1-8, 12-13, 15, 17-21, 27 and 29 have been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Corrsin (U.S. Patent No. 3,477,194), claims 1-8, 12-13, 15 and 17-21 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Muellich (U.S. Patent No. 5,893,959) in view of Corrsin, claims 22-26 and 28 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Corrsin in view of Osborne (U.S. Patent No. 4,069,080), and claims 22-29 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Muellich and Corrsin, further in view of Osborne. The outstanding rejections are traversed, as discussed below.

Claim Rejections - 35 U.S.C. § 102(b)

As noted above, claims 1-8, 12-13, 15, 17-21, 27 and 29 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Corrsin. Applicant respectfully traverses and submits that Corrsin fails to teach or suggest all the features recited by these claims, as evidenced by the following.

Claim 1 defines a method of forming a weld between plastics workpieces over a joint region comprising, *inter alia*, providing a radiation absorbing material at the joint region that has an absorption band in the range 780-1500 nm matched to a wavelength of incident radiation so as

to absorb the incident radiation and generate heat, the wavelength of the incident radiation being outside the visible range. Claim 1 further recites the features of exposing the joint region to incident radiation so as to cause melting of the surface of at least one workpiece at the joint region, and allowing the melted material to cool so as to weld the workpieces together. Also, claim 1 recites the workpieces include a first workpiece and a second workpiece, the first workpiece being any one of clear to translucent, the second workpiece being any one of tinted to opaque, and the radiation absorbing material being a radiation absorbing dye that is visually transmissive when the workpieces are welded together and when viewed through the first workpiece.

Applicant submits that Corrsin fails to teach or suggest at least the features of providing a radiation absorbing material at the joint region that has an *absorption band in the range 780-1500 nm matched to a wavelength of incident radiation* so as to absorb the incident radiation and generate heat, and the feature of the radiation absorbing material being a *radiation absorbing dye* that is *visually transmissive* when the workpieces, as claimed, are welded together and when viewed through the first workpiece. For instance, in the grounds of rejection, the Examiner alleges as follows:

“Corrsin discloses the sealing of thermoplastic thin materials ***using infrared radiation and a carbon material*** between the materials. The carbon substance is printed onto a board, which is faced or overlaid with a thermoplastic material. The coating and film are welded throughout the area overlying the infrared absorbing material. ***Absorbers may also be in the form of inks.***

Lamps or carbon dioxide lasers can be used. ***An absorber can be a visually transparent radiation absorber that is selective to radiation in a certain range of wavelengths.*** Radiation is chosen in a certain range of wavelengths, in this case infrared. Specifically, two plastic films where ***one film is a pigmented film and the other film are [sic] visually transparent.*** The layer of material, which is capable of absorbing radiation, is interposed between the two films in the areas to be sealed and the package is irradiated. Hence the films are sealed together by a substantially visually transparent radiation absorber, which selectively absorbs radiation, thus causing a concentration in heat in area where such absorber has been applied and thereby effecting sealing. (abstract, figures, col. 1, lines 20-50, col. 2, lines 24-57, col. 3, lines 30-71, col. 4, lines 5-50)”

See Non-Final Office Action of December 20, 2005 (hereinafter “Office Action”) at pages 3-4 (emphasis added).

Applicant respectfully disagrees with the Examiner’s characterization of the disclosure of Corrsin. Moreover, Applicant submits that the Examiner has not given proper weight to each feature in the claimed combination, as recited by claim 1. As demonstrated below, the Examiner is selectively lifting features from unrelated and inconsistent embodiments. However, neither the portions of Corrsin cited by the Examiner, nor Corrsin’s disclosure taken in its entirety, discloses all the features of the method defined by claim 1.

To support a conclusion that a claimed invention lacks novelty under 35 U.S.C. § 102, a single source must teach all of the elements of a claim. Hybritech Inc. v. Monoclonal

Antibodies, Inc., 802 F.2d 1367, 1379, 231 U.S.P.Q. 81, 90 (Fed. Cir. 1986). A claim is anticipated only if each and every element as set forth in the claim is found either expressly or inherently in a single prior art reference. Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). A single source must disclose all of the claimed elements arranged as in the claim. Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). A proper anticipation rejection requires that every element of the claim be found “in a single prior art reference.” See In re Robertston, 169 F.3d 743, 745, 49 U.S.P.Q.2d 1949, 1950 (Fed. Cir. 1999). For anticipation to exist, there must be no difference between the claimed invention and the reference disclosure, as that reference would be understood by one of ordinary skill in the art. See Scripps Clinic & Research Found. v. Genentech, Inc., 927 F.2d 1565, 1576, 18 U.S.P.Q.2d 1001, 1010 (Fed. Cir. 1991); *see also*, Crown Operations Intn’l, Ltd. v. Solutia, Inc., 289 F.3d 1367, 62 U.S.P.Q.2d 1917 (Fed. Cir. 2002). Further, “an anticipating reference must describe the [claimed] subject matter with sufficient clarity and detail to establish that the subject matter existed and that its existence was recognized by persons of ordinary skill in the field of the invention.” ATD Corp. v. Lydall, Inc., 159 F.3d 534, 545, 48 U.S.P.Q.2d 1321, 1328 (Fed. Cir. 1998) (*citing In re Spada*, 911 F.2d 705, 708, 15 U.S.P.Q.2d 1655, 1657 (Fed. Cir. 1990)). Rejections under 35 U.S.C. § 102 are proper only when the claimed subject matter is identically disclosed or described in the prior art. Thus, the cited reference must *clearly and unequivocally* disclose every element and limitation of the claimed invention.

Read in its entirety, Corrsin does not anticipate all the features of the method defined by claim 1 as set forth in the claim. For instance, Corrsin initially states that the “invention relates to welding by infrared radiation and more particularly the invention is directed to the joining of sheets of thermoplastic materials by radiating them in the presence of any material which will absorb the infrared radiation and thereby increase its temperature.” *See* Corrsin at col. 21-25.

However, Corrsin does not disclose a radiation absorbing material that both has an absorption band in the range 780-1500 nm *matched* to a wavelength of incident radiation and is visually transmissive when the workpieces are welded together and when viewed through the first workpiece. In this regard, Applicant notes that the disclosure of Corrsin is largely focused on the use of carbon as a radiation absorber. *See, e.g.*, Corrsin at col. 1, lines 40-51 and col. 2, lines 32-43. However, as carbon is opaque, the carbon is not “visually transmissive”, as claimed. Moreover, the “inks” that the Examiner refers to in the grounds of rejection are disclosed as “carbon containing inks”, which are likewise opaque and do not disclose a radiation absorbing material, as claimed.

Further, Corrsin discloses “another embodiment of the invention embraces using as an absorber a visually transparent radiation absorber that is selective to radiation in a certain range of wave lengths which will be referred to as a *selective absorber*.” *See* Corrsin at col. 3, lines 53-57 (emphasis added). Corrsin also describes sealing two transparent films, or substantially transparent films, by employing a “substantially visually transparent radiation absorber” which selectively absorbs radiation in a wave length to which the films are transparent, thereby causing

concentration of heat in the area of absorber application and effecting the sealing. *See* Corrsin at col. 3, lines 65-71.

However, the disclosure by Corrsin regarding the use of a selective absorber is at an incident radiation at **10.6 microns**, or 10,600 nm, which is clearly outside the claimed range of 780-1500 nm. In particular, Corrsin teaches that “[o]ne such selective absorber is polybutadiene which absorbs radiation at a wave length of 10.6 microns.” *See* Corrsin at col. 3, lines 71-73. Corrsin also describes “copolymers of polybutadiene with styrene acrylonitrile” as exhibiting selective absorption properties. *See* Corrsin at col. 3, lines 73-75. Further, Corrsin discloses that a “latex containing from 5-20% total solids of polybutadiene alone or with its copolymers” can be used as a radiation absorber and effects sealing when exposed to radiation at a wavelength of **10.6 microns**. *See* Corrsin at col. 3, line 75 - col. 4, line 6.

Finally, although Corrsin proceeds to discuss selective absorption of radiation in the near infrared, or 1 to 3 microns (1000 nm to 3000 nm), Corrsin discloses using near infrared incident radiation in connection with forming a package from plastic films in which one film is a “pigmented film” and the other film is visually transparent. *See* Corrsin at col. 4, lines 7-22. However, Corrsin discloses a selective absorber for this wavelength range is an aqueous suspension having from 10-15% total solids obtained by mixing a suitable amount of **gypsum** with a suitable amount of water using calcium oleate as a dispersant. *See* Corrsin at col. 4, lines 23-31.

Based on the foregoing, Applicant notes that, first, the use as carbon as a radiation absorber is not visually transmissive and therefore does not suggest a radiation absorbing dye, as

recited by claim 1, that is both visually transmissive when the workpieces are welded together and when viewed through the first workpiece. Indeed, carbon is opaque and the use of carbon as a radiation absorber would therefore teach one of ordinary skill away from the claimed method.

Second, although Corrsin may generally refer to welding of plastic films by the use of infrared radiation, Corssin does not disclose the use of a *visually transmissive* radiation absorber having an absorption band in the claimed range of **780-1500 nm** that is also *matched* to the wavelength of incident radiation. Rather, as noted above, Corrsin teaches the use of polybutadiene alone or with copolymers at an incident radiation of 10,600 nm.

Further, polybutadiene is a rubber polymer, and polybutadiene with styrene acrylonitrile is a rubber polymer with ABS thermoplastic. Almost all polymers exhibit intrinsic absorption in the wavelength range of 10.6 microns, the extent of which depends on the particular polymer. As a result, polymers can be welded together in the wavelength range of 10.6 microns without an absorber as a result of their intrinsic absorption.

Thus, Corrsin teaches the use of a rubber polymer (polybutadiene) to join two other polymer (polyethylene) sheets together. Moreover, sheets of polyethylene can be joined to each other without the need of any radiation absorbing material due to the intrinsic absorption properties in the 10.6 micron wavelength, as discussed, for example in Osborne at col. 1, lines 15-64.¹

¹ Osborne is relied upon by the Examiner in the rejections of claims 22-29.

In other words, Corrsin's teaching of the use of polybutadiene as a visually transmissive absorber relies on the intrinsic absorption of polymers to affect a seal at the 10.6 micron wavelength. Polybutadiene does not, however, absorb at 780-1500 nm as claimed. Consequently, the "visually transmissive" absorbers disclosed by Corrsin do not suggest a radiation absorbing dye provided at the joint region that has an absorption band in the range 780-1500 nm matched to the wavelength of incident radiation.

Third, the only specific mention of a radiation absorber that is exposed to incident radiation falling within the claimed range of 780-1500 nm is gypsum, which is a solid white pigment and therefore not visually transmissive. Thus, where Corrsin does disclose an incident radiation 1000 nm to 3000 nm, the radiation absorber is not visually transmissive, and therefore does not suggest a radiation absorbing dye, as recited by claim 1.

As evidenced by the foregoing, the disclosure of Corrsin, taken in its entirety and in proper context, fails to anticipate all the features as they are recited in the method defined by claim 1. Accordingly, reconsideration and withdrawal of the rejection is requested.

Further, Applicant submits that claims 2-8, 12, 15, and 17-34 are allowable at least by virtue of their dependency.

Claim Rejections - 35 U.S.C. § 103

With respect to the rejection of claims 1-8, 12-13, 15 and 17-21 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Muellich in view of Corrsin, Applicant respectfully traverses and submits that the Examiner has failed to establish *prima facie* obviousness.

As discussed below, Applicant submits that the combination of Muellich and Corrsin, even assuming *arguendo* that the Examiner's asserted motivation to combine is proper, fails to reasonably teach or suggest all the features of claim 1, as recited. For instance, the Examiner alleges that Muellich teaches all the features of claim 1 except "Muellich does not specifically teach use of the infrared." *See* Office Action at pages 3-4.

Applicant respectfully disagrees and submits that Muellich's deficiencies extend beyond the "use of infrared" noted by the Examiner. Indeed, Muellich teaches the use of laser welding to join workpieces together to produce a resultant structure that provides a "homogenous visual impression, in particular with regard to color." *See* Muellich at col. 2, lines 18-21. However, as discussed in the previous Amendment of August 15, 2005, the laser welding taught by Muellich involves providing suitable additives to both "workpiece parts" to be welded such that: a) with respect to *infrared radiation*, one of the workpieces is substantially transparent while the other is substantially absorbent, as described at col. 2, line 64 - col. 3, line 3, and b) with respect to the visible wavelength range, the additives are *impermeable to light rays* so that the resulting structure provides a substantially homogeneous visual impression by virtue of the workpieces being *opaque* to visible light, as described at col. 3, lines 3-7 and col. 9, lines 19-21.

Moreover, Muellich teaches that black dye pigments, which are not visually transmissive, are used as a radiation absorber between two workpieces. *See* Muellich at col. 7, lines 42-44. In contrast, claim 1 recites that the radiation absorbing material is a radiation absorbing dye that is *visually transmissive* when the workpieces are welded together and when viewed through the first workpiece. Thus, Muellich not only fails to suggest a radiation absorbing dye, as claimed,

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but Muellich's teaching of the use of a "black dye pigments" in which the welded structure includes additives that are "impermeable to light rays" would teach one of ordinary skill in that art away from the invention, as defined by claim 1.

Furthermore, Corrsin fails to compensate for the deficiencies of Muellich. As discussed above, Corrsin does not disclose a radiation absorbing material that both has an absorption band in the range 780-1500 nm *matched* to a wavelength of incident radiation and is visually transmissive when the workpieces are welded together and when viewed through the first workpiece. Therefore, neither Muellich nor Corrsin, whether taken alone or in combination, teaches or suggests all the features of claim 1 and the Examiner has therefore failed to establish *prima facie* obviousness.

Accordingly, reconsideration and withdrawal of this ground of rejection of claim 1 is requested. Further, Applicant submits that claims 2-8, 12, 15, and 17-34 are allowable at least by virtue of their dependency.

With respect to the rejection of claims 22-26 and 28 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Corrsin in view of Osborne, and the rejection of claims 22-29 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Muellich and Corrsin, further in view of Osborne, Applicant submits, without commenting substantively, that these claims are allowable at least by virtue of their dependency.

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New claims

In order to provide additional coverage merited by the scope of the invention, Applicant is adding new claims 30-34. Applicant submits that claims 30-34 are allowable at least by virtue of their dependency.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Brian K. Shelton
Registration No. 50,245

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

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